IN THE CLAIMS

Claim 1 (original): A pulse light drive circuit for semiconductor metrology apparatus, comprising:

(a) a pulse light source;

(b) an energy source connected to the pulse light source;

(c) a light detector positioned to receive pulse light from the pulse light source; and

(d) a drive circuit connecting the pulse light source, energy source and light detector, the drive circuit further comprising a signal processing circuit, and a cut-off switch adapted to cut off energy from the energy source to the pulse light source after a predetermined pulse light integrated intensity level is detected by the light detector.

Claim 2 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 1, wherein the energy source comprises a capacitor, and the signal processing circuit further comprises an integrator and a threshold comparator.

Claim 3 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 1, wherein the light detector further comprises a filter element.

Claim 4 (original). A pulse light drive circuit for semiconductor metrology apparatus according to claim 3, wherein the filter element comprises a wavelength selective element.

Claim 5 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 2, wherein the light detector produces a pulse light intensity signal, and the integrator integrates the pulse light intensity signal into an integrated light intensity signal.

Claim 6 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 2, wherein the cut-off switch further comprises a trigger switch connected between the threshold comparator and the capacitor.

Claim 7 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 6, wherein the pulse light source generates a light pulse having a predetermined duration, and the trigger switch cuts off energy to the pulse light source when the integrated light intensity signal reaches a predetermined level.

Claim 8 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 1, wherein the cut-off switch is connected between the energy source and the pulse light source, and the signal processing circuit further comprises an integrator connected between the light detector and the cut-off switch.

Claim 9 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 8, wherein the cut-off switch is repeatedly turned on and off to generate a plurality of light pulses, each having a predetermined duration.

Claim 10 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 9, wherein the light detector produces a pulse light intensity signal for each of the plurality of light pulses, and the integrator integrates the pulse light intensity signals into an integrated light intensity signal.

Claim 11 (original): A pulse light drive circuit for semiconductor metrology apparatus according to claim 10, wherein the cut-off switch cuts off energy to the pulse light source when the integrated light intensity signal of the plurality of light pulses reaches a desired preset level.

Claim 12 (currently amended): A semiconductor manufacturing process metrology apparatus comprising a pulse light positioned so as to direct light into a reactor chamber of a semiconductor manufacturing system, a power source, and a light detector to detect

light in the reactor chamber emitted from the pulse light, the metrology apparatus further comprising:

a pulse light drive circuit connecting the power source and the pulse light, the pulse light drive circuit further comprising a trigger circuit adapted to cut off power from the power source to the pulse light after a predetermined integrated intensity of light is detected in the reactor chamber by the light detector.

Claim 13 (original): A semiconductor manufacturing process metrology apparatus according to claim 12, wherein the power source comprises a capacitor, and the trigger circuit further comprises an integrator and a threshold comparator.

Claim 14 (original): A semiconductor manufacturing process metrology apparatus according to claim 12, wherein the light detector further comprises a filter element.

Claim 15 (original): A semiconductor manufacturing process metrology apparatus according to claim 14, wherein the filter element comprises a wavelength selective element.

Claim 16 (original): A semiconductor manufacturing process metrology apparatus according to claim 13, wherein the light detector produces a pulse light intensity signal, and the integrator integrates the pulse light intensity signal into an integrated light intensity signal.

Claim 17 (original): A semiconductor manufacturing process metrology apparatus according to claim 16, wherein the trigger circuit further comprises a trigger switch connected between the threshold comparator and the capacitor.

Claim 18 (original): A semiconductor manufacturing process metrology apparatus according to claim 17, wherein the pulse light generates a light pulse having a predetermined duration, and the trigger switch cuts off power to the pulse light when the integrated light intensity signal reaches a predetermined level.

Claim 19 (original): A semiconductor manufacturing process metrology apparatus according to claim 12, further comprising a cut-off switch connected between the power source and the pulse light, and the trigger circuit further comprises an integrator connected between the light detector and the cut-off switch.

Claim 20 (original): A semiconductor manufacturing process metrology apparatus according to claim 19, wherein the cut-off switch is repeatedly turned on and off to generate a plurality of light pulses, each having a predetermined duration.

Claim 21 (original): A semiconductor manufacturing process metrology apparatus according to claim 20, wherein the light detector produces a pulse light intensity signal for each of the plurality of light pulses, and the integrator integrates the pulse light intensity signals into an integrated light intensity signal.

Claim 22 (original): A semiconductor manufacturing process metrology apparatus according to claim 21, wherein the cut-off switch cuts off power to the pulse light when the integrated light intensity signal of the plurality of light pulses reaches a predetermined level.

Claim 23 (currently amended): A method for effecting endpoint detection in a semiconductor wafer manufacturing process, comprising:

(a) generating one or more light ~~pulse~~ pulses from a light source and introducing the ~~at least~~ one or more light ~~pulse~~ pulses into a process reactor of a semiconductor wafer processing system;

(b) detecting the one or more light ~~intensity~~ pulses in the process reactor with a light-detecting device, and converting ~~the~~ each detected light ~~intensity~~ pulse into a detected light intensity value;

(c) comparing the detected light intensity value with a stored desired light intensity value; and

(d) cutting off power to the light source when the stored desired light intensity value and the detected light intensity value are substantially the same.

Claim 24 (currently amended): A method for effecting endpoint detection in a semiconductor wafer manufacturing process according to claim 23, further comprising filtering the one or more light pulses through a filtering element in ~~a light detection~~ the light-detecting device.

Claim 25 (currently amended): A method for effecting endpoint detection in a semiconductor wafer manufacturing process according to claim 24, further comprising selecting a predetermined wavelength of the one or more light pulses that ~~passes~~ pass through the filtering element.

Claim 26 (currently amended): A method for effecting endpoint detection in a semiconductor wafer manufacturing process according to claim 23, wherein ~~detecting light intensity in the process reactor~~ converting the detected light pulse into a detected light intensity value further comprises integrating the detected light intensity into an integrated light intensity value.

Claim 27 (original): A method for effecting endpoint detection in a semiconductor wafer manufacturing process according to claim 26, wherein the one or more light pulses each are of a predetermined duration, and the power is cut off when the integrated light intensity value reaches a predetermined level.

Claim 28 (currently amended): A method for effecting endpoint detection in a semiconductor wafer manufacturing process according to claim 23, further comprising repeatedly turning on and off a switch to generate a plurality of said light pulses, each having a predetermined duration.

Claim 29 (currently amended): A method for effecting endpoint detection in a semiconductor wafer manufacturing process according to claim 28, further comprising

integrating ~~a~~ the detected light intensity value for each of the plurality of light pulses and combining the integrated ~~pulse~~ detected light intensity ~~signals~~ values into an integrated detected light intensity value.

Claim 30 (currently amended): A method for effecting endpoint detection in a semiconductor wafer manufacturing process according to claim 29, wherein power to the light source is cut off when the integrated detected light intensity ~~signal~~ value of the plurality of light pulses reaches a predetermined level.

Claim 31 (currently amended): A method for improving endpoint detection in a semiconductor wafer manufacturing process using an optical monitoring device, comprising:

(a) connecting power to a light source and generating a light event directed into ~~in~~ a process reactor of a semiconductor wafer manufacturing system;

(b) detecting the light event in the process reactor and converting the detected light event into a light intensity value;

(c) integrating the light intensity value into an integrated light intensity value;

(d) comparing the integrated light intensity value to a ~~predesired light~~ predetermined integrated intensity value; and

(e) disconnecting the power to the light source when the integrated light intensity ~~signal~~ value and the predetermined integrated light intensity ~~signal~~ value are substantially the same.

Claim 32 (original): A method for improving endpoint detection in a semiconductor wafer manufacturing process using an optical monitoring device according to claim 31, wherein generating a light event further comprises generating a single light pulse having a predetermined duration.

Claim 33 (currently amended): A method for improving endpoint detection in a semiconductor wafer manufacturing process using an optical monitoring device

according to claim 31, wherein generating a light event comprises generating a plurality of light pulses each having a duration shorter than ~~a~~ the duration of the light event.

Claim 34 (currently amended): A method for improving endpoint detection in a semiconductor wafer manufacturing process using an optical monitoring device according to claim 33, wherein detecting the light event comprises:

(a) detecting each light pulse; and

(b) converting each detected light pulse into a light pulse intensity value.

Claim 35 (currently amended): A method for improving endpoint detection in a semiconductor wafer manufacturing process using an optical monitoring device according to claim 34, wherein integrating the light intensity ~~signal~~ value comprises integrating each light pulse intensity signal into a plurality of integrated ~~pulse~~ light pulse intensity ~~signals~~ values, and combining the plurality of integrated light pulse intensity ~~signals~~ values to obtain the integrated light intensity signal.